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TEXAS INSTRUMENTS INCORPORATED
P O BOX 655474, M/S 3999
DALLAS, TX 75265

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/918,377
Filing Date: July 30, 2001
Appellant(s): RATCLIFF ET AL.

Carlton H. Hoel
Texas Instruments Incorporated
P.O. Box 655474, M/S 3999
Dallas, Texas 75265
For Appellants

EXAMINER'S ANSWER

This is in response to the appeal brief filed May 2, 2007 appealing from the Office action mailed February 2, 2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,904,152	MOORER	06-07-2005
6,151,179	POSS	11-21-2000
6,148,314	MATHENY et al.	11-14-2000
5,333,200	COOPER et al.	07-26-1994
6,298,370	TANG et al.	10-02-2001

(9) Grounds of Rejection

The following grounds of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. **Claims 1, 6-7, 12-13, and 18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Moorer U.S. Patent 6,904,152 in view of Cooper et al. U.S. Patent 5,333,200 (hereinafter, "Cooper").

Regarding **claim 1**, Moorer teaches an audio processing machine comprising (see Figs. 3, 4, 5, 6, 7, and respective portions of the specification):

a plurality of audio inputs (inputs of signals m_1, m_2, m_3, Figs. 5, 6, 7; col. 3, lines 48-52; col. 9, line 59 – col. 10, line 35; especially col. 9, lines 64-67);

a plurality of audio outputs (outputs of signals s_1, s_2, s_3, s_4, s_5, a_0, a_1, b_1, Figs. 4, 5, 6; col. 9, line 59 – col. 10, line 35; especially col. 10, lines 12-15);

a plurality of audio processing channels (channels of recording or transmission medium; a_0, a_1, b_1, are processed, i.e., recorded, in channels of recording medium 127, 127', Figs. 5, 6, 7; col. 5, lines 41-47); and

and a plurality of multiply switches (matrices 129, 131, Fig. 6) configured to selectively mix (i.e., depending angle, Fig. 8; by processor 133 or 141, Figs. 5 or 6; col. 10, line 36 – col. 11, lines 30) the plurality of audio inputs (inputs of signals m_1, m_2, m_3, Fig. 6) and the plurality of audio outputs (outputs a_0, a_1, b_1, of microphone matrix 129, Fig. 6, become inputs of speaker matrix 131; control processor 145 controls matrix 131 in the same manner of control processor 59 controlling matrix 53, Fig. 4, see col. 10, lines 5-37; col. 8, lines 49-46) such that audio signals passing through the plurality of audio inputs are processed via a plurality of audio processing channels selected from the plurality of audio processing channels (of recording medium 127',

Figs. 4, 6; col. 5, lines 41-47) to generate at least one desired audio output signal (s_1, s_2, s_3, s_4, s_5, Figs. 4, 5, 6; col. 9, line 59 – col. 10, line 35; especially col. 10, lines 12-15).

Moorer further discloses to implement the sound processing in digital form (col. 6, lines 35-38), improvement in surround sound technique (col. 1, lines 14-16).

However, Moorer reference does not explicitly disclose the audio signals are processed via a plurality of audio filters selected from the plurality of audio filters.

Cooper teaches an audio stereo system which provides enhanced sound-imaging localization (col. 3, lines 54-57) in which the audio signals are processed via a plurality of audio filters selected from the plurality of audio filters (BQ filters 174, 184, Fig. 6A; col. 14, lines 23-29).

It would have been obvious to one of the ordinary skill in the art at the time the invention was made to incorporate the plurality of audio filters taught by Cooper with the audio processing machine of Moorer such that the audio signals are processed via a plurality of audio filters as claimed for purpose providing enhanced sound-imaging localization, as suggested by Cooper in column 3, lines 54-57.

Regarding **claims 7, 13, and 18**, these claims have similar limitations as claim 1. Therefore, they are rejected under Moorer in view of Cooper for the same reasons set forth in the rejection of claim 1.

Regarding **claims 6, and 12,** Cooper, as modified, further teaches the plurality of audio filters comprise biquad filters (BQ filters 174, 184, Fig. 6A; col. 14, lines 23-29).

3. **Claims 2-3, 8-9, 14-15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Moorer U.S. Patent 6,904,152 in view of Cooper et al. U.S. Patent 5,333,200 (hereinafter, "Cooper"), and further in view of Matheny et al. US. Patent 6,148,314 (hereinafter, "Matheny").

Regarding **claims 2, 8, and 14,** Moorer in view of Cooper teaches audio processing device according to claims 1, 7, and 13, respectively. However, Moorer in view of Cooper does not explicitly disclose wherein the plurality of multiply switches are comprised of single-cycle multiply switches.

Matheny teaches the multiplier 18, Fig. 2A performs a single-cycle multiply (col. 5, lines 36-41). Therefore, it would have been obvious to one of the ordinary skill in the art at the time the invention was made to incorporate the single-cycle multiply switches taught by Matheny with the audio processing machine of Moorer in view of Cooper such that the multiply switches are comprised of single-cycle multiply switches as claimed in order to allows the processing cycle count for the fed back additions to be reduced, as suggested by Matheny in column 2, lines 40-41.

Regarding **claims 3, 9, and 15,** Moorer in view of Cooper teaches audio processing device according to claims 1, 7, and 13, respectively. Matheny, as modified,

further teaches wherein the plurality of multiply switches are comprised of programmable multiply switches (col. 3, lines 49-57).

4. **Claims 5, 11, and 17** are rejected under 35 U.S.C. 103(a) as being unpatentable over Moorer U.S. Patent 6,904,152 in view of Cooper et al. U.S. Patent 5,333,200 (hereinafter, "Cooper"), and further in view of Poss US. Patent 6,151,179.

Regarding **claims 5, 11, and 17,** Moorer in view of Cooper teaches audio processing device according to claims 1, 7, and 13, respectively. However, Moorer in view of Cooper does not explicitly disclose wherein the multiply switches are further configured to generate a first logic signal to open a conductive path, a second logic signal to close the conductive path, and a third logic signal to open the conductive path while inverting a signal phase associated with an audio signal passing there through.

Poss discloses a signal processing apparatus for processing an analog input signal (col. 1, lines 57-59) in which the algorithms for the gain and timing error signals the value Y(k-2) is a multiplier having a value of +1, -1 or 0 for each sample and hold on any given cycle. To multiply by one when Y(k-2)=1, the signal out of the sample and hold is not changed. To multiply by -1 when Y(k-2)=-1, the signal current output is simply reversed by a switch inside the sample and hold circuit. To multiply by zero when Y(k-2)=0, the sample and hold current is shut off by a switch within the sample and hold circuit.

Therefore, it would have been obvious to one of the ordinary skill in the art at the time the invention was made to incorporate the multipliers as taught by Poss with the audio processing machine of Moorer in view of Cooper so that the multiply switches are further configured to generate a first logic signal to open a conductive path, a second logic signal to close the conductive path, and a third logic signal to open the conductive path while inverting a signal phase associated with an audio signal passing there through as claimed for purpose of providing an improved signal processing apparatus, as suggested by Poss in column 1, lines 1-2.

5. **Claims 4, 10, 16, and 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Moorer U.S. Patent 6,904,152 in view of Cooper et al. U.S. Patent 5,333,200 (hereinafter, "Cooper") in view of Matheny et al. US. Patent 6,148,314 (hereinafter, "Matheny"), and further in view of Tang et al. U.S. Patent 6,298,370 (hereinafter, "Tang").

Regarding **claims 4, 10, and 16,** Moorer in view of Cooper in view of Matheny teaches audio processing device according to claims 3, 9, and 15, respectively. However, Moorer in view of Cooper in view of Matheny does not explicitly disclose wherein the programmable multiply switches are reconfigurable on-the-fly.

Tang teaches a process of a computer system wherein the programmable multiply switches are reconfigurable on-the-fly (col. 116, lines 30-35). Therefore, it would have been obvious to one of the ordinary skill in the art at the time the invention

was made to incorporate the programmable multiply switches which are reconfigurable on-the-fly as taught by Tang with the audio processing machine of Moorer, Cooper, Matheny in combination for purpose of allocation logic operations for performing resource management and dynamic load balancing for computer systems, as suggested by Tang in column 116, lines 37-39.

Regarding **claim 19,** Moorer in view of Cooper teaches audio processing device according to claims 18. However, Moorer in view of Cooper does not explicitly disclose the multiply switches are programmable multiply switches.

Matheny teaches a data processing system (2, Fig. 1) in which the multiplier (18, Fig. 2A) is programmable multiplier (col. 5, lines 30-41).

It would have been obvious to one of the ordinary skill in the art at the time the invention was made to incorporate the programmable multiplier taught by Matheny with the audio processing machine of Moorer in view of Cooper such that the multiply switches are comprised of programmable multiply switches as claimed in order to allows the processing cycle count for the fed back additions to be reduced, as suggested by Matheny in column 2, lines 40-41.

However, Moorer in view of Cooper in view of Matheny does not explicitly disclose wherein the programmable multiply switches are reconfigurable on-the-fly.

Tang teaches a process of a computer system wherein the programmable multiply switches are reconfigurable on-the-fly (col. 116, lines 30-35). Therefore, it would have been obvious to one of the ordinary skill in the art at the time the invention

was made to incorporate the programmable multiply switches which are reconfigurable on-the-fly as taught by Tang with the audio processing machine of Moorer, Cooper, Matheny in combination for purpose of allocation logic operations for performing resource management and dynamic load balancing for computer systems, as suggested by Tang in column 116, lines 37-39.

(10) Response to Argument

6. Appellants' arguments filed on 05/02/2007 have been fully considered but are not persuasive.

7. Appellants assert on page 5 regarding Claims 1,6-7, 12-13, and 18:

> Independent claim 1 *requires multiply switches to select filters* and to select processing channels for input signals to generate output signal(s). In contrast, cited Moorer Figs. 3-7 and text disclose linear transformations of input signals from microphones to generate output signals for multiple channel recording (i.e., 5-channel surround sound); the linear transformations are implemented with variable gain amplifiers according to where the input from a microphone is to be "positioned" (apparent location to a listener playing back the recording with a surround sound speaker system). *The circuitry (i.e., processing channels) of Figs. 3-7 does not change*; rather, the gains are adjusted by solving linear equations for the positions (Moorer column 6, lines 35- 62). Thus the gain amplifiers of Moorer do not suggest the selecting multiply switches of claim 1.

8. In response to Appellants' argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., *multiply switches to select filters*) are not recited in the rejected claims. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See In re Van Geuns, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

In this case, the claims read "a plurality of multiply switches" is "configured to selectively mix the plurality of audio inputs and the plurality of audio outputs". The claims do not specify "a plurality of audio filters" being "selected" by "a plurality of multiply switches" nor the claims specify "a plurality of audio processing channels" being "selected" by "a plurality of multiply switches" in the clause that followed "such that".

In addition, the claims do not specify to change the "processing channels". The claims state "audio signals passing through the plurality of audio inputs are processed via . . . audio filters . . . and . . . audio processing channels . . ." instead. As presented in the Office Action, Moorer discloses detailed microphone matrix (129) of Figs. 5 and 6 in Fig. 7, in which the gains of the amplifiers 151-159 are individually set by the control processor (133 or 141, FIG. 5 or 6) through circuits (135). These gains define the transfer function of the microphone matrix 129 (col. 10, lines 36-64). Thus the microphone matrices of Moorer meet the selecting multiply switches of Claim 1.

9. Appellants further assert on page 5 regarding Claims 1,6-7, 12-13, and 18:

> However, the filters of Cooper are for crosstalk cancellation in a stereo (2-channel) playback system and are always used; there is no filter selection (by the multiply switches) as required by claim 1. Indeed, Cooper column 14, lines 6-7 note that Fig. 6A is an implementation of Fig. 1C; and Fig. 1C shows recording from two microphones (152, 154) on an artificial head (151) (column 8, lines 15-28). Thus Cooper would not be considered by one of ordinary skill in the art with Moorer which employs multiple microphones (m1, m2, m3 of cited Fig. 6a) at the sound sources and records multiple (e.g., 5) channels.

10. Regarding Appellants' argument that "there is no filter selection (by the multiply switches) as required by claim 1", please see § 8 above for response.

In addition, one of ordinary skill in the art at the time the invention was made when facing design need of filtering audio input signals to generate filtered audio signals would have been obvious to have considered the audio filters taught by Cooper, and motivation to do so is from Cooper in column 3, lines 54-57.

11. Regarding Appellants' argument of claims 2-3, 8-9, and 14-15, please see § 8 and § 10 above for response.

12. Regarding Appellants' argument of claims 5, 11, and 17, please see § 8 and § 10 above for response.

13. Regarding Appellants' argument of claims 4, 10, and 16, please see § 8 and § 10 above for response.

As these are the totality of arguments presented, and they have been found unpersuasive, the existing rejection is deemed appropriate.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Con P. Tran CPT
August 15, 2007

CURTIS KUNTZ
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

Conferees:

VIVIAN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600